



COMPETITIVE MARKETS AND CONSUMER WELFARE

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CONSUMERS AND COMPANIES BENEFIT FROM TRANSPARENT GREEN MARKETING

Consumers increasingly encounter products marketed with green claims. This information enables consumers to play an active role in a more sustainable economy but misleading and confusing green claims may dampen consumers' interest in purchasing more sustainable products.

This article outlines results from a study conducted to evaluate how well consumers understand different types

of green claims, and how these claims affect willingness to pay. The study demonstrates that consumers are willing to pay more for "green" products but also, that this willingness is affected by trust and transparency in the market.

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1. Introduction

The Danish Competition and Consumer Authority (DCCA) conducted a behavioural study to determine how three different types of green claims affect consumer choice of food products, and how consumers perceive the different types of green claims. Furthermore, the study tests the effects of increased transparency by adding a disclaimer to green claims that only refer to specific elements of the product, e.g. the packaging.

The study finds, on the one hand, that different types of green claims affect consumer choice and that the effect broadly tend to mirror the underlying environmental content of the claims. On the other hand, when asked explicitly about the environmental benefits of the different types of claims, consumers become confused by claims relating to sub-elements of the product, such as the packaging. This tendency is particularly pronounced when these claims are presented with large percentage improvements. Furthermore, consumers tend to perceive any type of green claim as a signal that the product generally has a lower environmental impact relative to similar products without green claims.

One of the study's central findings is that green claims, which create an impression of having a lower environmental impact than they really have, functions as a negative externality for other green claims in the market. This happens because these claims dampen consumers' interest in choosing more sustainable products in general¹.

The negative effect of these types of green claims can be mitigated by increased transparency. Transparency can be improved in these situations by qualifying the claims, relating the environmental performance in the claim to the total environmental footprint of the product. This information also improves consumers' ability to understand these specific types of green claims.

2. Green marketing

Consumption of goods and services, specifically food, is recognised as having a significant negative impact on the global environment and climate². European citizens also recognize this problem and many consumers believe that "changing the way we consume" is an important step towards tackling environmental problems³.

Against this backdrop a product's environmental impact is becoming an increasingly important competitive parameter for companies and something they want to communicate to

their customers via marketing (cf. Box 1). The incentive to provide consumers with more "environmentally friendly" products is an important vehicle in the efforts to reduce the environmental footprint of consumption, and the promotion of *truly* "greener" products plays a vital role in this regard.

Box 1: Defining green marketing

Green, or environmental, marketing can be thought of as a "catch all" term that covers green claims such as; climate claims, sustainability logos, labels, trust marks and quality marks related to the environmental performance of a product, a process or a business.

This article focuses on green claims. These claims refer to the practice of suggesting or otherwise creating the impression (in the context of a commercial communication, marketing or advertising) that a product or a service has a positive or no impact on the environment or is less damaging to the environment than competing products⁴.

When green claims are vague, misleading, not true or unsubstantiated, i.e. creates the impression of a lower environmental impact than is really the case, this practice is often called "greenwashing"⁵.

However, a 2020 sweep by the European Consumer Protection Cooperation Network revealed that almost half of the sampled instances of green claims appeared to be false or unsubstantiated⁶. Furthermore, many studies show that the majority of consumers find green claims hard to understand and generally lack trust in green marketing⁷.

From the consumers' point of view, the understanding and trust might be low due to the wide range of methodologies used to calculate environmental impacts; the variety of ways in which green claims are communicated; and the multiplicity of labelling schemes. These factors all affect the comparability of green marketing information, which is important since the ability to compare green claims is considered to be crucial by consumers⁸.

Companies may also struggle to navigate the legal landscape surrounding green marketing, as no specific legal framework exists for green claims, although the general prohibition to mislead the consumer by marketing or by omission surely play an important role (cf. Box 2).

1 This is similar to the findings in Chen, Y. S., & Chang, C. H. (2013). Greenwash and green trust: The mediation effects of green consumer confusion and green perceived risk. *Journal of Business Ethics*, 114(3), 489-500.

2 Sala et.al (2019), Consumption and Consumer Footprint: methodology and results, EUR 29441 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-79-97255-3, doi:10.2760/15899, JRC113607.

3 Special Eurobarometer 501 (March 2020) <https://ec.europa.eu/commission/office/publicopinion/index.cfm/survey/getSurveydetail/instruments/special/surveyky/2257>

4 Misleading green claims, Extract of the Guidance for the implementation/application of Directive 2005/29/EC on unfair commercial practices, https://ec.europa.eu/environment/eusss/pdf/green_claims/en.pdf

5 IBID

6 https://ec.europa.eu/commission/presscorner/detail/en/ip_21_269

7 European Commission (2014), Consumer Market Study on Environmental claims for non-food products, p. 19-20.

8 Yates, L. (2009). Green expectations: Consumers' understanding of green claims in advertising. *Consumer Focus*.

Box 2: Current and future legal framework

Currently, the regulation is based on the general prohibition to mislead the consumers from the Unfair Commercial Practices Directive 2005/29. The guidance of the European Commission for the application of the Unfair Commercial Practices Directive provides a definition of environmental claims, which is based on the impression that the claims create (see box 1). Similarly, the Danish Consumer Ombudsman has also published guidelines on the use of environmental and ethical claims.

Enforcement happens on a case-by-case basis, and authorities are usually challenged by complicated documentation⁹, which can affect processing time and the amount of cases the authorities are able to take up.

The European Commission is currently strengthening the legal framework around green claims with proposals on how companies substantiate their green claims¹⁰, and how these are presented to consumers¹¹. Furthermore, specifically for food products, the EU Farm to Fork Strategy contains a proposal for a sustainable food labelling framework to empower consumers to make sustainable food choices¹².

Do consumers differentiate between different types of green claims?

The DCCA's experiment focusses on the effect that a specific sub-category of green marketing – claims about the carbon emissions related to the product – has on consumers' choice and their understanding of the products carbon footprint. In this article we refer to these claims as climate claims. The experiment tests and compares the following three different types of claims:

1. "Less" – claims that indirectly imply a lower carbon footprint compared to similar products
2. "Branding" – claims about an ambition to reduce the carbon footprint of the product in the future
3. "Packaging" – claims about a reduction of the carbon footprint from a sub-element of the products (the packaging).

In the experiment, all the claims are presented with an accompanying percentage, indicating the relative size of

⁹ European Commission, Study for the Fitness Check of EU consumer and marketing law, 2017, p.39.

¹⁰ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12511-Environmental-performance-of-products-&-businesses-substantiating-claims_en

¹¹ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12467-Consumer-policy-strengthening-the-role-of-consumers-in-the-green-transition_en

¹² https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy/sustainable-food-consumption_en

the reduction in carbon emission. While the percentages across the claims were of a similar magnitude, the fact that the percentages relate to different elements of the products footprint means that there are large differences in the implied "climate friendliness" between the claims.

Furthermore, while all three claims use references as a means to communicate "climate friendliness", the nature of these references differ across the claims. "Less" claims implicitly refer to the climate impact of a product relative to other similar products. "Branding" claims on the other hand refers to the future and a promise to improve emissions at a later point. Finally, the "packaging" claims use previous versions of the packaging as a reference and claims an improvement relative to previous versions of the packaging.

With similar percentages a product with a "less" claim can thus be assumed to imply a more significant reduction in the total carbon footprint than a product with a "packaging" claim, since packaging typically accounts for just a tiny fraction of the products total carbon footprint.

The experiment aims to test consumers' interpretation of climate claims with these types of ambiguities. This means that in this experiment, as in the real world, claims could be factually correct but require some interpretation by the consumer to figure out which product is the most "climate friendly".

Given the rather cognitively demanding task of evaluating the claims, the study's main hypothesis is that consumers will use any type of climate claim as a rule of thumb to indicate that the product has a lower carbon footprint. This means that consumers should interpret a product with a climate claim as generally having a lower impact on the climate when compared to a similar product without a climate claim, despite this not necessarily being the case¹³.

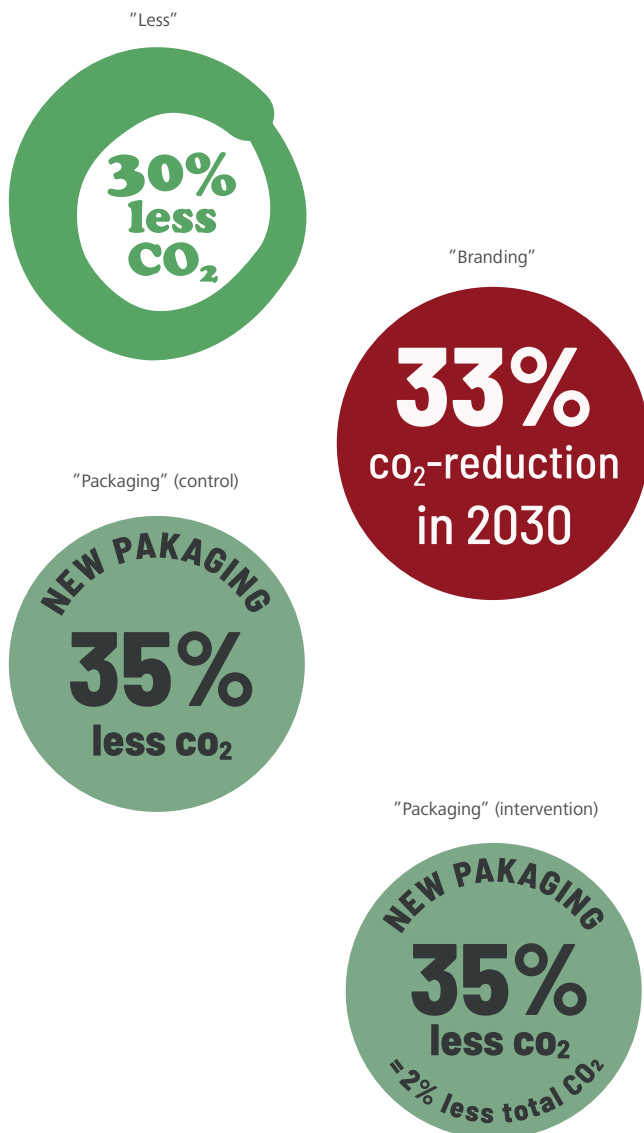
The second hypothesis is that consumers will interpret climate claims with larger percentage improvements as products with a lower carbon footprint, regardless of the claim's actual content. Studies on environmental product information have previously shown that some consumers might compare percentages even when these are not comparable¹⁴. The experiment is set up to test this, as the largest percentage improvements are shown in "packaging" type claims, and the lowest percentages on the "less" type claims.

The final hypothesis is that more transparent "packaging" claims improves consumer understanding (cf. example 4 in Figure1).

¹³ Given that climate claims usually indicate a relative improvement compared to a past performance (which is also the case in this experiment), a product without a claim can still have a lower carbon footprint.

¹⁴ European Commission (2019), Consumer testing of alternatives for communicating the Environmental Footprint profile of products (p. 98)

Figure 1: Examples of the claims used in the experiment



Notes: The experiment uses different versions of the climate claims, i.e., the claims were not always exactly as shown above. The percentages shown were always slightly larger for the “packaging” claims compared to the other two types of claims. The intervention group saw the exact same climate claims as the control group for the “less” and “branding” types, but for “packaging” claims the additional information relating to the total footprint of the product was added.

Design of the experiment

All three hypotheses were tested in an experiment with two main parts:

- 1) A simulated shopping task (choice experiment, cf. Box 3), where consumers chose products from a set of alternatives
- 2) A pairwise comparison task, where consumers were asked to indicate, which product they thought had the lower carbon footprint.

The products were common grocery items that a majority of consumers likely buy routinely.

In the first part, respondents were presented with a shopping list with nine items¹⁵ from different categories. They were told that they would be presented with three product alternatives for each category, and asked to choose one. The products within one group varied only on three attributes: type of climate claim (“less”, “branding”, “packaging” or no claim), brand (“name brand” or one of two “private label” brands from common danish retailers), and price (0 – 50 pct. relative to a reference price). This type of experiment is described in Box 3, and can be used to estimate consumers’ willingness to pay (WTP) for products with each type of climate claim. This gives an indirect observation of consumers understanding of the different types of climate claims - through the impact claims have on consumers’ choices.

The second part of the experiment tests consumer understanding of the climate claims more directly. Here, consumers are presented with two similar products with different types of climate claims, and asked to indicate, which product they think has the lower carbon footprint.

To test the transparency hypothesis consumers were randomly split into two groups. The two groups differed only in one small aspect: the presentation of the “packaging” claim. For consumers in the intervention group, information about the effect of the claim relative to the total footprint of the product was added (cf. example 4 in Figure 1). Apart from this addition, the two versions were identical, i.e. the other types of climate claims were exactly the same, and the choice scenarios and pairwise comparison tasks were identical.

The experiment was distributed as an online survey and over 1.000 responses were collected by a professional market research company in July 2021. The market research company applied a methodology that ensures that the demographical variables (age, gender and location) of the final sample matched the general adult population in Denmark, i.e. that the answers are representative in these dimensions. The experiment could be completed on a desktop computer or a tablet¹⁶.

¹⁵ The nine food product categories were tortillas, eggs, chopped tomatoes, dark bread, mayonnaise, pasta, orange juice, butter and salami.

¹⁶ Mobile phones were excluded, due to technical limitation such as screen size.

Box 3: Choice experiments

A choice experiment¹⁷ is an established survey approach designed to elicit consumer preferences based on hypothetical markets. The method starts with the idea that the “value” from a product does not derive from the product itself, but from its individual attributes. The experiment presents consumers with a series of choice situations, in which they are required to choose between multiple products. In an individual choice situation, the products vary only in the attributes specified by the researcher, and the choice occurs by trading of the individual attributes of the different products. The experimental design, i.e., the way in which the choice situations are constructed, enables an estimation of the independent effect from each¹⁸.

When one of the attributes is the price of the product, the ratio between an attribute’s effect on choice and the effect of price, yields the consumers’ willingness to pay for the attribute.

Choice experiments are widely used when studying consumer behaviour and preferences. However, the results can only be considered valid to the extent that participants in the experiment behave as real consumers.

Result: Consumers value the underlying climate benefit – but more when climate claims are transparent

The analysis of consumers’ choices reveals a significant difference in the effect of the different types of climate claims. In the control group, where “packaging” claims did not include the disclaimer (upper left panel in Figure 2), products with “packaging” claims were, less likely to be chosen than products without climate claims, or products with any of the other two types of climate claims¹⁹. “Less” claims had the largest effect on consumer choice, and “branding” claims also positively affected product choice.

The fact that the “packaging” claims were found to reduce WTP is runs counter to the main hypothesis that consumers would interpret any climate claim as indicating a lower carbon footprint. For this hypothesis to hold all types of climate claims should have roughly similar positive effects on the consumers’ choice.

¹⁷ For a more thorough description of choice experiment method, see e.g. Hensher, D. A., Rose, J. M., Rose, J. M., & Greene, W. H. (2005). *Applied choice analysis: a primer*. Cambridge university press.

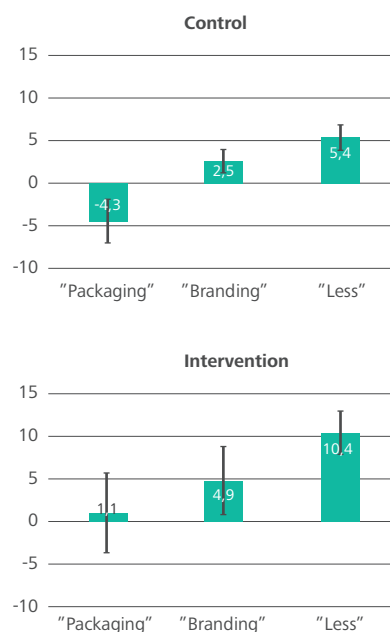
¹⁸ The experiment employed an efficient design with zero priors, except for a small negative prior for price. The total design consisted of 12 choice task, which were blocked into two, i.e. each consumer answered six value eliciting choice task, with the remaining three, out of the nine shown, being filler tasks.

¹⁹ Consumers were found to have a negative WTP (-4,3 pct.) for products with a “packaging” claim compared to products without a claim.

The finding that the effect of a climate claim differs depending on the type of claim – and that consumers rank the claims in line with the underlying climate benefit of the claim is contrary to the second hypothesis. This suggests that consumers are able, at least on average, to rank the different climate claims according to their environmental value.

Informing consumers about the absolute effect of of a “packaging” claim removes the negative effect that these claims were had in the control group (lower left panel in Figure 2). With the disclaimer present consumers become indifferent about products with “packaging” claims and non-claim products.

Figure 2: Consumers’ WTP for different types of claims



Note: Consumers’ WTP derives based on their choices in the choice experiment,²⁰ (error bars indicate 95 pct. confidence interval). The results indicate that consumers in the control group were, on average, willing to pay 5,4 pct. more for a product with a “less” claim, compared to a similar product without any climate claim. Consumers were faced with the same choice across both groups, with the only difference being the presentation of the “packaging” claims, cf. Figure 1) Source: Behavioural Experiment, DCCA, 2021

Interestingly, the addition of this information to “packaging” claims significantly affects the effect of other types of climate claims. Consumers are now willing to pay a premium almost twice as big (10,4 pct. compared to 5,4 pct.) for products with “less” claims, compared to the control group. Similarly, the WTP for “branding” claims nearly doubles. These results are not an explicit confirmation of the third hypothesis; that

²⁰ All results based on an MNL model in WTP space (see Train, K., & Weeks, M., 2005. *Discrete choice models in preference space and willingness-to-pay space*). More advance models, such as the MMNL, did not change the conclusions from the experiment.

transparency improves consumer understanding. Rather, it seems that non-transparent claims reduce the overall trust in climate claims, which again reduces consumers WTP more for these. Similar effects are found in previous studies²¹.

In the analysis of the effect of the climate claims, the other attributes are controlled for. The results for the quality attribute indicate that consumers were willing to pay between 20 – 25 pct. more for a “name brand” product compared to a “private label” brand, with the effect being similar between the two groups. A higher price had a negative effect on the probability of choosing a product, as could be expected.

Result: The percentages in climate claims can be misleading – but to a lower degree when climate claims are transparent

In the second part of the experiment consumers directly compared the effects of different climate claims. In this part of the experiment, more consumers thought that a product with a larger “packaging” claim had the lower carbon footprint compared to products with other types of climate claims with lower percentages. Compared to a product with a “less” claim (cf. Figure 3), the share of respondents who answered that the product with a “packaging” claim had a lower carbon footprint was slightly lower in the intervention group, indicating that increased transparency improves consumer understanding²².

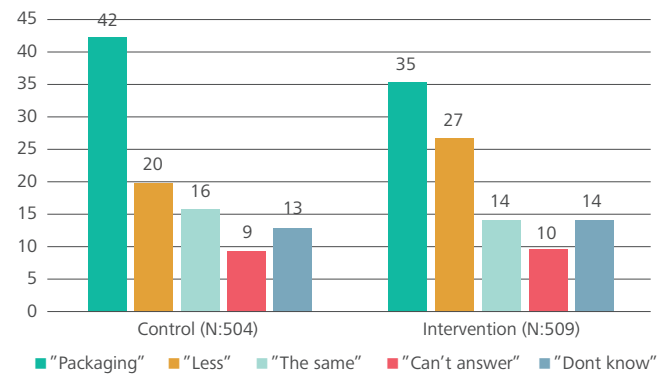
Given an assumption that consumers, have positive preferences for products with lower climate impacts, this result contrasts the findings from the first part of the experiment, where consumers seem to value “less” and “branding” claims more than “packaging” claims. The size of the percentage in the climate claim could be an explaining factor. In part two of the experiment, “packaging” claims always had the highest percentage, with “less” and “branding” claims having the same percentage. To investigate this, a follow up survey with 402 respondents was conducted, where the percentages in the “less” and “packaging” claims were switched, so that the percentage in the “less” claims was larger. The results from this survey provide evidence for the fact that the percentages are in fact driving the results, as the majority of respondents now indicate that the product with the “less” claim has a lower climate impact²³.

21 Chen, Y. S., & Chang, C. H. (2013). Greenwash and green trust: The mediation effects of green consumer confusion and green perceived risk. *Journal of Business Ethics*, 114(3), 489-500.

22 When consumers compared “packaging” claims to “branding” claims in the control (intervention) group, 44 pct. (43 pct.) indicated that the product with the “packaging” claim had the lower carbon footprint, and 17 pct. (19 pct.) indicated the products with the “branding” claim.

23 42 pct. of the respondents answered that the product with the “less” claim had a smaller carbon footprint, whereas 9 pct. indicated the product with the “packaging” claim. Furthermore, in the follow up survey consumers were shown a “less” claim, and asked what the percentage in the claim concerned. The majority (61 pct.) answered that the percentage was related to the products total carbon footprint, as was the intention in the experiment.

Figure 3: Share of consumers answering which product they thought had the lowest carbon footprint (“packaging” or “less”)



Note: Respondents were shown similar products with either a “packaging” or a “less” claim, and asked which one they thought had the lowest carbon footprint. Answer options also included “They have the same carbon footprint”, “Can’t answer” and “Don’t know”.

Source: Behavioural Experiment, DCCA, 2021

Result: Products with any type of climate claim are perceived as having a lower climate impact than products without climate claims

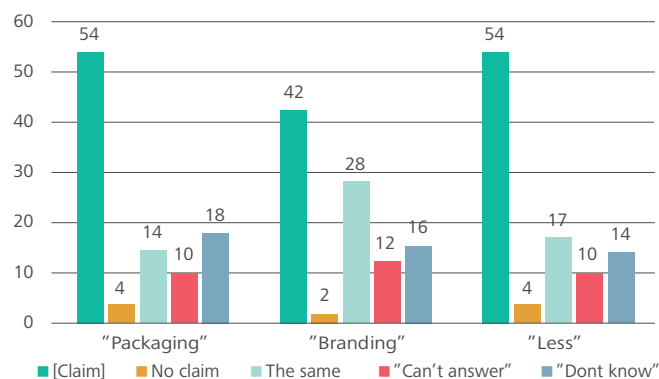
Consumer generally thought that products with any type of climate claim had a lower carbon footprint compared to products without climate claims (Figure 4). This indicates that climate claims generally work as a rule of thumb for identifying products with lower climate impact. This is irrespective of the fact that both “branding” and “packaging” claims refer to improvements relative to a past or present version of the product or company and, as such, do not allow comparisons between products.

Thus, the high share of respondents who either said that the carbon footprints were the same or could not be compared for packaging (42 pct.) and branding (56 pct.) are technically correct. Out of these, roughly half stated, in a follow up question that this answer was due to the lack of comparability or relevance of the information.

The fact that many consumers perceive any information about the products’ climate impact as an indicator of a generally lower carbon footprint highlights how climate claims – as presented in this experiment – should be both transparent and salient so consumers are able to distinguish and value climate claims according to their effects. The results also highlight that while marketing could be factually correct, the overall impression it creates might still mislead

consumers²⁴, because climate claims are difficult to understand, particularly when they relate to different elements of the product.

Figure 4: Share of consumers answering which product they thought had the lowest carbon footprint (claim or no claim)



Note: The figure shows the responses to three different pairwise comparisons between products with no claim, or a "packaging", "branding" or "less" claim. No difference between the control and intervention group was found, and responses have been pooled (N:1013). As an example, in the leftmost comparison, 54 pct. of respondents indicated that a product with a "packaging" claim had a lower carbon footprint when compared to a product without a climate claim, which only 4 pct. thought had the lower carbon footprint of the two.

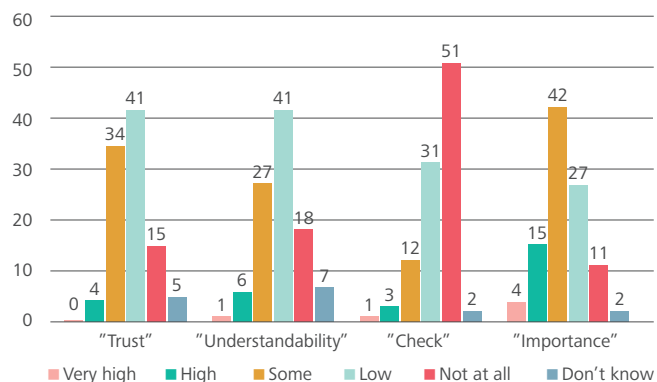
Source: Behavioural Experiment, DCCA, 2021

Result: Consumers have low levels of trust and understanding of climate related marketing claims – and rarely read the fine print

The majority of consumers said they had no, or low, trust in companies' green claims (cf. Figure 4). Similarly, the majority of consumers said they have no, or a low, understanding of companies' climate related marketing, and more than 80 pct. of the respondents indicated that they do not, or to a low degree, investigate the underlying documentation for green claims.

However, the majority of consumers still say that the carbon footprint has at least some, a large, or a very large impact on their purchasing behaviour. Taken together, this could indicate that the current lack of trust and clarity of carbon footprint orientated marketing is hampering consumers' willingness and ability to consume in a more climate conscious manner.

Figure 5: Share of consumers agreeing to various statements concerning climate related marketing



Note: In the figure, respondents from both groups have been pooled (N:1013) as no significant difference between groups were found. The full statements started with "To what degree...":

Trust: "... do you trust companies' climate claims?"

Understandability: "... do you think companies' climate claims are easy to understand?"

Check: "... do you check what a products' climate claim is based on?"

Importance: "... is the climate impact important to you when you shop?"

Source: Behavioural Experiment, DCCA, 2021

Conclusions and recommendations

This article reviews experiments that test the impact and consumer understanding of different types of green claims. Consumer understanding of green marketing is a key factor in securing a level playing field for more sustainable products, and for fostering a transition to a more sustainable economy, a key goal of the EU consumer policy revision.

The results from the study highlight how green claims, which try to create an impression of having a lower environmental impact than they really have, can have a damaging effect on the market as a whole, dampening consumers' interest in purchasing more sustainable products in general.

²⁴ This point highlights the fact that providing detailed positive rules regarding green claims, that secure that the overall impression is not misleading, is hard. Similarly, prohibiting the marketing of "small steps" in terms of environmental impact is not a panacea, as it might reduce the incentive for companies to undertake these improvements, which also have apart to play in the green transition.